

## Shuttle-Mir



**External EVA:** Mir 24 cosmonaut Anatoly Solovyev and U.S. astronaut Michael Foale performed a six-hour extravehicular activity Sept. 6 to inspect damage on Mir's Spektr module, but could not find a puncture. They also repositioned a solar array to increase its ability to collect solar energy, and retrieved a U.S. radiation detection monitor left by Jerry Linenger during an April EVA.

## STS-87



Columbia (24th flight OV-102)  
88th Shuttle flight  
Pad 39B  
Launch date: Nov. 19, 2:18 p.m.  
USMP-4; Spartan 201-04  
Crew: Kregel; Lindsey; Scott; Chawla; Doi (Japan); Kadenyuk (Ukraine). USMP-4 is the fourth U.S. Microgravity Payload. It will feature six experiments in the payload bay and three additional investigations in the middeck area. The approximately 16-day flight duration allows extended research that capitalizes on the microgravity environment.

## Lunar Prospector



Launch date: No earlier than Nov. 23 (tentative)  
Launch vehicle: Lockheed Martin Launch Vehicle-2  
Launch Pad: Launch Complex 46, Cape Canaveral Air Station  
The spacecraft will be shipped to Florida in late October. Meanwhile, the LMLV-2 third stage, an Orbus 21D® solid rocket, was to be placed atop the rocket at the end of this month.

# Spaceport News

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John F. Kennedy Space Center

## Mir supply needs test mettle of KSC payloads team

When the Space Shuttle Atlantis soars into space later this month, it will carry for the first time six yellow spherical bottles containing what could literally be "the breath of life" for the crew of the Russian Space Station Mir.

The bottles of breathing air are similar to the container of air used by the Mir crew in June during the critical minutes it took to seal a hatch when a Russian cargo ship banged into Mir's Spektr module, puncturing its aluminum hull and causing depressurization of the

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## Flow director team completed



**FULL HOUSE** — The recent addition of Pepper Phillips to the orbiter flow director team at KSC fills a fourth and final slot, providing a NASA overseer for each vehicle in the fleet. From left are Phillips, named Endeavour flow director in August; Grant Cates, who has been Columbia's flow director since October 1995; Scott Cilento, named to oversee Discovery in September 1996, and Conrad Nagel, who has managed processing of Atlantis since May of 1985.

## NASA workers get buyout opportunity

All permanent civil service employees are eligible for a buyout opportunity that opens Oct. 1. Eligible employees who voluntarily leave NASA within the established timeframe will receive separation incentive pay in an amount equal to their calculated severance pay entitlement, up to a maximum of \$25,000, or a year's salary, whichever is less.

KSC is trying to reduce its civil service work force of 1,895 permanent employees by 424 people by fiscal year 2000 — a little more than two years from now. Normal attrition with no new hires will not achieve the required reduction.

Certain organizations/professions are not being offered the buyout. These are the Space Station Hardware Integration Directorate, the Checkout and Launch Control System Directorate, and the

Advanced Development and Shuttle Upgrades Directorate. Attorneys and physicians also are excluded. The number of eligible positions in Shuttle processing is limited to no more than 40.

According to the KSC Administration Office, up to 236 buyout requests are

expected to be honored, but additional requests may be accepted. To date, 489 federal civilian workers at KSC have taken advantage of buyout opportunities since the first one in 1994. A Web site with more information is at: <http://www.ksc.nasa.gov/hmper/buyout98.html>

## Hispanic music program set for Sept. 16 in the Training Auditorium

Mark your calendars to attend the kickoff for Hispanic Heritage Month. From 10 a.m. — 12 p.m., Sept. 16, in the KSC Training Auditorium, dancers from the Ballet Folklorico *Alma Mexicana* and the singer Antonio Infante, accompanied by the *Mariachi Bravo* group, will

entertain employees. Center Director Roy Bridges Jr. will be the keynote speaker.

Employees are encouraged to attend the program with permission of their supervisor.

Hispanic Heritage Month is being held this year from Sept. 15 — Oct. 15.

## NASA team to investigate main engine test stand fire

NASA Headquarters Associate Administrator for Space Flight Wilbur Trafton has appointed a major incident investigation board to determine the cause of a fire that occurred on a developmental Space Shuttle main engine being tested at NASA's Stennis Space Center (SSC), on in late August.

The fire happened at approximately 3:16 p.m. EDT on the A-1 test stand at Stennis, located in Bay St. Louis, Miss. There were no injuries caused by the incident.

The engine being tested at the time, engine number 0524, was a developmental engine used for testing new engine components. It was not a flight engine. At 568 seconds

into a planned 710-second test, the engine was operating at 109 percent power when the turbine discharge temperature exceeded its limits. This caused an automatic cutoff of the engine. At that point, or subsequent to it, a fire occurred on the stand.

What impact, if any, this incident will have to the upcoming STS-86 launch date is currently unknown. However, the Space Shuttle Main Engine (SSME) configuration used in the test was significantly different than the current SSME configuration on Shuttle Atlantis.

The incident board is expected to report its findings to senior NASA managers in about 45 days.

## Changes announced in KSC travel service and mail delivery

Effective Aug. 30, American Express Government Services became the provider of NASA travel service, replacing All World Travel Official and Leisure Travel Offices at KSC. Chris Bowman, formerly with All World, returns as manager and most of the travel agents are the same. New phone

numbers are 867-3927/455-9871 for the Headquarters branch, and 853-9528/730-1277 for the Cape office.

Effective Sept. 8, centerwide mail delivery was reduced from twice a day to just once, due to budget constraints. Time of delivery will depend on location.

## Wanted: Walkers and runners for the Fall Intercenter Run Oct. 7

Fitness enthusiasts should mark their calendars now for the Fall Intercenter Run, set for Oct. 7, 5

p.m., at KSC's Shuttle Landing Facility runway.

The 10K, 5K, and 2-Mile run/walk offer a great way to have some fun and friendly competition against coworkers and friends. All civil service



and contractor personnel are eligible and registration is free.

Stop by either KSC Fitness Center to register or contact

Cheryl Tragesser, 867-7829, for details.

Registration deadline is close of business, Sept. 26. T-shirts and tank tops will be available for purchase at any NASA Exchange Store.

## Cassini launch delay



WORKERS in the Payload Hazardous Servicing Facility remove protective covering from around the Cassini spacecraft with its attached Huygens probe. The spacecraft was destacked from the launch vehicle and brought back from Launch Pad 40 on Cape Canaveral Air Station after damage to thermal insulation was discovered inside Huygens, caused by a high flow rate of conditioned air. Further internal inspection, insulation repair and a cleaning of the probe are now required. Mission managers are targeting a mid-October launch date rather than the originally scheduled Oct. 6.

## Florida attractions offer specials

Universal Studios Florida and Wet 'n Wild are offering KSC employees special rates this fall.

Tickets are available at all

**Wet'n Wild**

NASA Exchange retail stores, and can be purchased Sept. 1 - 30:

Wet 'n Wild: Tickets are \$12

per adult. Children age two years and under are admitted free. The tickets are valid until Dec. 31 of this year.

Universal Studios Florida:

Tickets are \$26 per adult or child, with admission free for children age two years and under. This special rate cannot be purchased at the gate, and is valid through the end of September.

## KSC employees join Leadership Brevard Class of 1998

Five KSC employees have been named to the 1998 Leadership Brevard class: Steve Chance, NASA; Jennifer Kunz, NASA; Jennifer Lyons, NASA; Russ Pierce, United Space Alliance; and Jill Rock, NASA.

The Leadership Brevard program is a 10-seminar series aimed at educating, preparing and inspiring leaders on the challenges facing Brevard County and to enhance leadership skills. The overall goal is to connect community leaders for positive impact.

## Center gets another rebate check from Florida Power & Light

Florida Power & Light (FPL) Company officials recognized KSC's commitment to reducing overall energy consumption and costs with a rebate check for \$195,000, presented to Center Director Roy Bridges at KSC Aug. 27. KSC has received FPL rebates for its energy-saving efforts since 1993.

The check, presented by Larry Laseter, vice president of Sales and Marketing for FPL, is the largest single-project rebate to date. The center received a \$220,000 rebate from FPL in 1993 for several energy-conservation measures it had implemented.

The energy savings realized by KSC comes as a direct result of installing new chilled water systems hardware, also known as 'chillers' (used to produce air conditioning inside facilities), in the KSC Industrial Area Chiller Plant. Previously, individual chillers were located in various buildings in the industrial area. The new hardware reduced the number of smaller chillers in KSC's Industrial Area from 18 to six, thereby reducing the cost of operations



CENTER Director Roy Bridges Jr. (right) accepts a rebate check from FPL Vice President Larry Laseter. This is the second rebate KSC has received from FPL in four years.

and maintenance.

Additionally, the new chillers use more environmentally friendly refrigerants, reducing potentially hazardous effects to the Earth's ozone layer.

Expansion of the chiller plant also allows KSC to produce an additional 7,500 tons of air-conditioning capacity.

The FPL rebate came as a result of the commitment KSC has demonstrated to energy-saving modifications now and in the future. Federal regulations state that 50 percent of KSC's rebate will be deposited in the U.S. Treasury. The other half will be retained by KSC for use in future energy-saving initiatives.



ACE hurtles into a cloud-studded sky as onlookers try to capture the image. The Delta II launch was the second under the Boeing name and the first from Cape Canaveral Air Station. Liftoff was delayed one day by the presence of two commercial fishing vessels in the launch danger area.

## ACE spacecraft operating well, fate of Lewis is less certain

NASA's Advanced Composition Explorer (ACE), launched from Cape Canaveral Air Station Aug. 25 aboard a Boeing Delta II, is operating nominally and en route to its final on-orbit position. Less certain is the fate of the Lewis spacecraft, launched three days earlier from the West Coast aboard a Lockheed Martin Launch Vehicle (LMLV).

The 1,731-pound ACE is already halfway toward a point about a million miles from Earth called the Libration Point, where the gravitational pulls of the Earth and the Sun are balanced. This balance keeps ACE at an ideal location to sample the matter that comes near the Earth from the Sun.

ACE is designed for a two-year mission that could extend to five years.

Lewis is one of two spacecraft developed as part of NASA's Small Spacecraft Technology Initiative. Named for the 19th century American explorers, Lewis and Clark are satellites containing state-of-

the-art instruments to demonstrate next generation remote sensing technology. Launch aboard the LMLV was flawless, but an errant thruster firing placed Lewis in an excessive spin mode. Mission managers continue to work a recovery plan to return the satellite to normal operations.



LEWIS spacecraft is secured to the LMLV payload adapter during preflight preparations at Vandenberg Air Force Base. Lewis is part of NASA's Small Spacecraft Technology Initiative program.

## Rocking around the rocket



AGAINST the backdrop of a Saturn V rocket (left) and space memorabilia, British rock group Genesis debuted its new album, *Calling all Stations*, live from the Apollo/Saturn V Center Aug. 28. The two-hour program was aired live across a network of more than 100 radio stations as well as via the Internet. The event also marked the debut of new lead singer Ray Wilson, who follows in the footsteps of Peter Dinklage and Phil Collins. About 200 KSC employees attended the late-night event, which will be followed by a North American concert tour this fall.

## STS-86...

(Continued from Page 4)

interior. "If they hadn't had one of these air containers when the collision occurred, they would not have had the extra 20 critical minutes needed to seal the hatch on Spektr," said Frances Stadler, KSC Boeing environmental control system/fluids lead systems engineer.

KSC employees have responded to last-minute cargo requests on more than one of the six previous Shuttle-Mir dockings. On the most recent docking mission, STS-84, a Russian oxygen generating unit was added to the cargo manifest only a few weeks before launch to replace a malfunctioning unit on Mir. But the request for the three air pressurization units for Mission STS-86 was unique. It was a first for Shuttle payload workers because of the

extremely high air pressurization requirements.

The Russians need the air because they are planning at least six — and up to eight — spacewalks to make all the necessary repairs from the collision of the Progress vehicle and Spektr. The units would be used to repressurize the airlocks after the spacewalks. The U.S. astronauts living aboard Mir, including Michael Foale (currently) and David Wolf (who transfers to Mir on STS-86), are expected to participate in some of those spacewalks.

Russian Progress supply ships already have or will transport six of the units. Those, plus the three brought by Atlantis on STS-86, are expected to fulfill the spacewalk needs on the Mir through the next several months. Stadler said that the Shuttle may have to bring another three units up to Mir

in January on the STS-89 mission, the eighth of nine planned dockings. Each unit with two bottles can provide approximately 425 cubic feet of breathing air. Five of the units would repressurize a module about the size of the nearly 43-foot-long Spektr which has a pressurized volume of almost 2,200 cubic feet.

One unit consists of two 20-liter titanium spheres, each slightly smaller than a basketball, mounted on a base plate. Altogether, the three units will comprise only a fraction — approximately 289 pounds — of the three-and-a-half tons of science/logistical equipment and supplies that will be exchanged between the two orbiting spacecraft during the scheduled 10-day mission.

Once KSC payload officials had a full understanding of the Russian requirements, they had 13 days to get ready for the arrival of Russian engineer Sergei Romanov and technician Anatoli Karpov, and the filling task to begin. Even without the tight time constraints, it proved to be a challenging job.

First, they had to hunt far and wide for available parts and then build a portable gauge regulator assembly that was oxygen-compatible and could accommodate pressures of up to 6,000 pounds per square inch (psi). (The closest high pressure used around the center was in life support, and

that was only up to 4,000 psi.) Compressed air at 6,000 psi was brought in "tube banks" to KSC. The air pressurization units were filled to about 5,400 psi. After proof tests and leak checks, the compressed air had to be "bled down" to its flight pressure of 4,641 psi. The process was a lot more complex — and time-consuming — than filling a scuba tank, for example.

"Because of the high pressure, you can't fill a bottle too quickly or bleed it off too quickly because it will result in a drastic temperature increase," Stadler said. Also, since the compressed air was well over the 3,000 psi range, it had to be treated as if it were pure oxygen with more stringent requirements in place. For instance, alcohol could not be used to clean the containers. The transfer of air took about a week.

"Everybody did their part. Everybody had a 'can-do' attitude and did what it took — overtime, working weekends — to get the job done. In the true sense of the word, it was a team effort," said Stadler, who led the KSC effort involving Boeing engineers, logistics personnel and facilities fabrication shop workers.

"Frances Stadler and her team did an outstanding job pulling this effort together on such short notice," agreed STS-86 KSC Payload Manager Todd Corey.



THE KSC AND RUSSIAN TEAM which prepared air pressurization units, shown in foreground, for launch aboard the Shuttle Atlantis on STS-86 under a tight timetable posed for a group photograph after their work was complete. From left, are Dave Bush, NASA fluids systems engineer; Anatoli Karpov, Russian technician with RSC Energia; Rich Martucci, NASA launch site support manager; Frances Stadler, Boeing environmental control system (ECS)/fluids lead systems engineer; Julia Bateman, Russian interpreter; Jim Bancroft, Boeing logistics support; Garry Eggleston, Boeing ECS/fluids systems engineer; Mary Chetirkin, Boeing requirements implementation engineer; Sergei Romanov, RSC Energia senior engineer; and, kneeling, Rolande Purcell, Boeing technician. The air pressurization units will be used to support spacewalks on the Russian Space Station Mir over the next few months.



John F. Kennedy Space Center

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